

Field Reference — Diffusion Bag Samplers

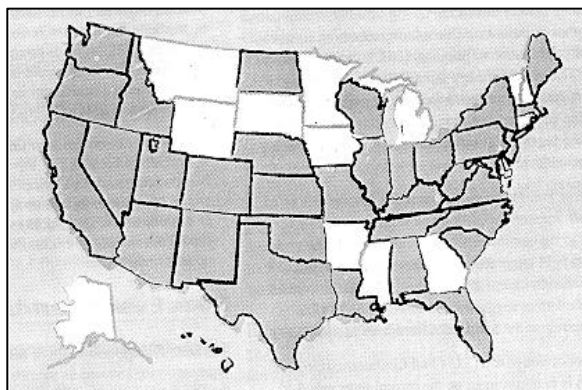
Table 1. Compounds tested under laboratory conditions for use with passive diffusion bag samplers (Vroblesky and Campbell, 2001).

Tested compounds showing good replication (average differences in concentration of 10 percent or less between diffusion-sampler water and ambient water)			
Benzene	2 Chlorovinyl ether	<i>cis</i> -1,2-Dichloroethene	1,1,1-Trichloroethane
Bromodichloromethane	Dibromochloromethane	1,2-Dichloropropane	1,1,2-Trichloroethane
Bromoform	Dibromomethane	<i>cis</i> -Dichloropropene	Trichloroethene
Chlorobenzene	1,2-Dichlorobenzene	Dibromochloromethane	Trichlorofluoromethane
Carbon tetrachloride	1,3-Dichlorobenzene	<i>Trans</i> -1,3-Dichloropropene	1,2,3-Trichloropropane
Chloroethane	1,4-Dichlorobenzene	Ethyl benzene	1,1,2,2-Tetrachloroethane
Chloroform	Dichlorodifluoromethane	Naphthalene	Tetrachloroethene
Chloromethane	1,1-Dichloroethene	Toluene	Vinyl chloride
Tested compounds showing moderate replication (average differences in concentration of 11 to 15 percent between diffusion-sampler water and ambient water)			
Bromomethane	1,2-Dichloroethane	<i>trans</i> -1,2-dichloroethene	Methylene chloride
Total Xylenes			
Tested compounds showing poor replication (average differences in concentration greater than 15 percent)			
1,1-Dichloroethane	Methyl- <i>tert</i> -butyl ether	Styrene	

Contacts:

- Interstate Technology and Regulatory Cooperation (ITRC) — Diffusion Sampler Group
George Nicholas — (609) 984-6565
Don Vroblesky — (803) 750-6115
www.itrcweb.org
- EON Products (Licensed Diffusion Bag Supplier)
Brad Varhol — (800) 474-2490
www.eonpro.com
- Columbia Analytical (Licensed Diffusion Bag Supplier)
Walt Scheibel — (716) 288-5380 (east coast)
John Hick — (206) 824-2933 (west coast)
www.caslab.com

ITRC Aligned States (shaded)



Guidance Document:

Vroblesky, D. A. and Campbell, T. R., User's Guide for Polyethylene Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Concentrations in Wells (March, 2001).

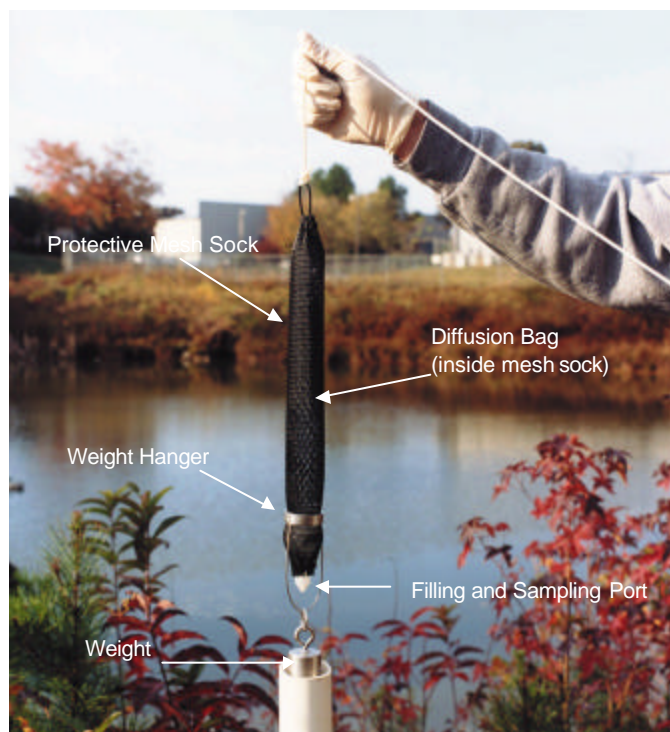


Photo of EON Diffusion Bag Sampler

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Diffusion Sampler User Instructions

INSTALLING ONE OR MORE SAMPLERS PER WELL (EON Diffusion Sampler)

1. Remove the Plug from each Sampler and fill the Samplers with distilled water until each sampler is completely full of water. To use the Fill Kit (optional, you can direct pour), insert the short nozzle into the Sampler and pour lab certified or distilled water into the tube as you would a funnel. Fill the Sampler until water rises and stands at least half way up the Fill Kit to expand the Sampler to it's maximum capacity. Be sure to remove air pockets if they are visible. Insert the Plug firmly into the Sampler. (A small air bubble from the plug is of no concern).
2. Start with the Sampler that will be lowermost in the well and slide the Hanger Assembly and Weight over the top Handle and down the Sampler body until it rests securely near the bottom of the sampler. Be sure the Weight is hanging down below the Plug. If only using one Sampler, attach the Weight to a cord length equal to the distance from the bottom of the well to the middle of the screen interval. Tie the cord to the Hanger Assembly, then lower the Weight into the well. If only using one Sampler skip to Step 4.
3. Slide a Hanger Assembly (without Weight) over the top Handle and down the Sampler body of *each remaining Sampler* until each Hanger rests securely near the bottom of the Sampler. Attach a tether cord from the top Handle of the lowermost Sampler to the Hanger of the Sampler to be positioned at the next higher interval. Be sure the tether length corresponds to the selected interval distance between Samplers. Repeat for all Samplers working upward in the well profile.
Only the bottom Sampler will utilize a Weight. Each of the upper Samplers will utilize a Hanger from which a tether cord will connect to the top of the next lower Sampler.
4. Fix a suitable suspension cord to the top Handle of the uppermost Sampler and lower the Sampler string into the well, until positioned as intended in the screen flow zone near the bottom of the well. Feel for the tension on the cord to change when the weight hits the bottom. Leave Samplers in place for a time suitable for equilibration (minimum two weeks).

RECOVERY

1. Remove the Sampler from the well.
2. Remove the Hanger and Weight by sliding the Hanger Slide Ring upward over the body and off the top Handle.
- 3a. **To Pour the Sample:**
Invert the Sampler so the white Fill Plug is pointing upward. Remove the plug. This can easily be done by gently rocking the plug sideways while pulling out of the nozzle.
Pour the sample gently into the sample vial or use the VOC Discharge Accessory.
- 3b. **To Use the VOC Discharge**
Select a point on the Sampler near the bottom of the Sampler above the fill nozzle. Press one end of the small diameter discharge tube firmly into the clear polyethylene membrane until it pierces the membrane. Flow will begin immediately. Place the other end of the discharge tube into the sample vial and gently position the Sampler for effective discharge. Manipulate the Sampler to start and stop flow as needed.
4. Dispose of the Sampler in accordance with regulations. Reuse the Hanger and Weight Assembly after soap and water decon. Install a new Sampler for retrieval during next sampling event if applicable.

INSTALLATION (COLUMBIA ANALYTICAL FIELD READY PDB SAMPLERS)

1. Assemble your hanging line for PDB Sampler(s) by attaching stainless steel weight(s) to one end and locating moveable wing-nut clamp(s) to the line at a distance ensuring that the PDB sampler hangs at desired elevation in the well screen. Keep all line materials on a clean polyethylene sheet during preparation. Braided polyester type rope can be used in place of coated stainless steel line.
2. Attach the top of the PDB Sampler(s) to the wing nut clamps with plastic cable ties or stainless steel snap rings. Quarter inch diameter holes are provided in the tabs of the samplers for this purpose. When only one PDB Sampler is deployed, the bottom of the sampler need only be attached to the line with a cable tie.
3. In rock wells with no pipe, a protective mesh should be placed over the PDB Sampler. The cable ties attached to the tab holes should be weaved through the mesh to keep it from slipping off the sampler. For piped wells, no mesh is necessary because of the protective seams along the sampler sides.
4. Attach the top end of the hanging line to the J-Hook or well cap so that the sampler(s) is/are located properly.

RECOVERY

1. Allow for full equilibrium before recovering samplers. (a 14 day period is standard)
2. Wearing gloves, remove the sampler(s) from the well using the attached line and dry the sampler with a clean paper towel.
3. Within one hour of pulling from well, cut the top tab partially off below the heat seal. Gently pour the contents of the sampler into 40 ml vials. (A suggested way to facilitate the pouring is to use a sampler holder constructed of a half section of 1/4" PVC pipe.)



Photo of Columbia Analytical PDB Sampler